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FORM 13-7 (REV. 10-90)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

TAK.P.US0029

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/857892

INTERNATIONAL APPLICATION NO.
PCT/JP/00908

INTERNATIONAL FILING DATE
17 February 2000(17.2.00)

PRIORITY DATE CLAIMED
12 October 1999(12.10.99)

TITLE OF INVENTION

PADDED BODY

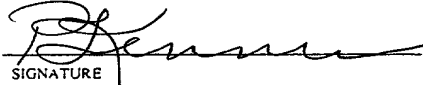
APPLICANT(S) FOR DO/EO/US Taro Ogawa, Yasumasa Senoo, Yasuyuki Toda, Mitsuo
Katayama and Takahiro Hara

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to promptly begin national examination procedures (35 U.S.C. 371(f)).
4. ☒ The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☒ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☒ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 16 below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: Verified English translation of priority document
(Japanese Application No. Heisei11(1999)-289480
References cited in International Search Report (in
Japanese Demand; in Japanese)
International Search Report (in Japanese)

| | | | | | |
|--|--------------|--|------------|---|--|
| U.S. APPLICATION NO. 097857892 | | INTERNATIONAL APPLICATION NO. PCT/JP00/00908 | | ATTORNEY'S DOCKET NUMBER TAK.P.US0029 | |
| 17. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1000.00 X International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$860.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 ENTER APPROPRIATE BASIC FEE AMOUNT = | | | | CALCULATIONS PTO USE ONLY | |
| | | | | \$ 860 00 | |
| Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)). | | | | \$ 00 | |
| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE | | |
| Total claims | 13 - 20 = | 0 | X \$18.00 | \$ 160 00 | |
| Independent claims | 5 - 3 = | 2 | X \$80.00 | | |
| MULTIPLE DEPENDENT CLAIM(S) (if applicable) | | | + \$270.00 | \$ 1,020 00 | |
| TOTAL OF ABOVE CALCULATIONS = | | | | \$ 1,020 00 | |
| <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2. | | | | \$ | |
| SUBTOTAL = | | | | \$ 1,020 00 | |
| Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)). | | | | \$ | |
| TOTAL NATIONAL FEE = | | | | \$ 1,020 00 | |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property | | | | \$ | |
| TOTAL FEES ENCLOSED = | | | | \$ 1,020 00 | |
| | | | | Amount to be refunded: \$ charged: \$ | |
| a. <input checked="" type="checkbox"/> A check in the amount of <u>\$ 1,020.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>18-0987</u> . A duplicate copy of this sheet is enclosed. | | | | | |
| NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status. | | | | | |
| SEND ALL CORRESPONDENCE TO Phillip L. Kenner, Esq. Renner, Kenner, Greive, Bobak, Taylor & Weber First National Tower, 4th Flr. Akron, OH 44308-1456 | | | | | |
| | | | |  SIGNATURE | |
| | | | | Phillip L. Kenner NAME | |
| | | | | <u>22,353</u> REGISTRATION NUMBER | |

Form PTO-1390 (REV. 10-2000) page 2 of 2

(Transmittal Letter to the United States Designated Office (DO/US)—Entry Into National Stage under
 35 U.S.C. 371—PTO 1390 [13-7]—page 2 of 2)

09/857892

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

531 Rec'd PC 11 JUN 2001

In the application of)

TARO OGAWA, YASUMASA SENOO,
 YASUYUKI TODA, MITSUO
 KATAYAMA, and TAKAHIRO HARA)

Group Art Unit:

Examiner:

Serial No.)

Filed:)

For: PADDED BODY)

PRELIMINARY AMENDMENT

Box Patent Application
 ASSISTANT COMMISSIONER FOR PATENTS
 Washington, D.C. 20231

Sir:

In conjunction with the filing of the instant national phase application based upon International Application No. PCT/JP00/00908, please incorporate the following changes prior to calculating the filing fee.

In the Claims:

Please replace the following claim. A marked-up copy of the claim as amended is attached hereto as Exhibit A.

8. The method of claim 3, wherein said filler is made of foamed urethane, cloth or plastics, and said binder is a urethane binder.

Add new claims 16 and 17 as follows:

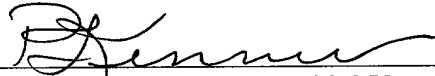
- 1 - 16. The method of claim 5, wherein said filler is made of foamed urethane, cloth or
 2 plastics, and said binder is a urethane binder.
- 1 17. The method of claim 6, wherein said filler is made of foamed urethane, cloth or
 2 plastics, and said binder is a urethane binder.--

Remarks

The above amendments to the claims have been made solely for the purpose of eliminating multiple dependencies and do not introduce new matter. The scope of the claims remains identical to the claims of the PCT application.

Therefore, favorable action on claims 3-8 and 11-17 is earnestly solicited.

Respectfully submitted,



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[illegible]

1 8. (Amended) The method of [any one of claims 3, 5 and 6,] claim 3, wherein said
2 filler is made of foamed urethane, cloth or plastics, and said binder is a urethane
3 binder.

Moreover, if the inner body has a depression part, it is required to carry out a special treatment between the depression part formed on the inner body and the corresponding part of the skin layer to adhere therebetween. Such a special treatment is carried out using adhesive and the like. However, since a surface to be treated is inside the skin layer, such a treatment is difficult to carry out.

The surface-smoothness and the separation of a fraction of the inner body both become considerably worse, as the filler such as chips used for the inner body is harder. Thus, in the prior art, soft foamed urethane chips are used as the filler.

In productive steps of a seat and accessories equipped in an automobile, a large amount of waste such as foamed urethane chips and a piece of the skin layer is produced. Even though it is considered to recycle such waste, it is difficult to use the waste as filler used for the inner body due to the reasons described above.

Thus, the present invention is made to solve the above problems, and its object is to provide a padded body (typically used for a headrest and an armrest equipped in an automobile) composed of a skin layer formed in a bag shape and filler made of a granular or fragmental material such as chips padded into the skin layer and its manufacturing method, and according to the present invention, the padded body can be easily formed by padding the filler into the skin layer and its quality is stably maintained even though any filler having any hardness is used.

Another object of the present invention is to provide the padded body described above and its manufacturing method wherein the skin layer can be adhered to the filler padded into it so as not to separate the skin layer from a mass of the filler padded into it even though the padded body has a depression part.

Still another object of the present invention is to provide a padding

and/or molding container for carrying out the method according to the present invention.

Summary of the Invention

One aspect of the present invention is a method for manufacturing a padded body composed of a skin layer formed in a bag shape and filler made of a granular or fragmental material padded into the skin layer wherein the filler adheres each other and adheres to the skin layer. In this method, a water reactive binder is mixed with the filler, and then, a mixture of the filler and the binder is padded into the skin layer to form a padded body. Then, steam is passed through the padded body so that the binder reacts to the steam passing through the padded body, and thereby the filler adheres each other and adheres to the inner surface of the skin layer.

Prior to passing steam through the padded body, the method includes setting the padded body in a molding container. The molding container has a predetermined cavity, and thereby the padded body can be molded into a predetermined shape.

Another aspect of the present invention is a method for forming a padded body composed of a skin layer formed in a bag shape and filler made of a granular or fragmental material to be supplied to the inside of the skin layer. In this method, the skin layer has at least a porous part and an opening, and this skin layer is set in a padding container. The padding container has an inner space, a suction port connected between the inner space and a pumping source and a supply port through which the filler is supplied to the inside of the skin layer. The supply port is provided in the padding container such that the opening of the skin layer set in the padding container can fit to the supply port, and thereby the skin layer is set in the padding container such that the opening of the skin layer fits to the supply port. Then, the pumping source is driven to produce airflow from the supply port to the inside of the skin layer through the opening

and from the inside of the skin layer to the suction port. Then, by use of this airflow, a predetermined amount of the filler is supplied to the inside of the skin layer to form a padded body.

The filler may be premixed with a water reactive binder, and the padded body may be set in a molding container having a predetermined cavity. Thus, the binder reacts to steam passing through the molding container, and thereby the filler adheres each other and adheres to the skin layer.

Still another aspect of the present invention is a method for manufacturing a padded body composed of a skin layer formed in a bag shape and filler made of a granular or fragmental material padded into the skin layer wherein the filler adheres each other and adheres to the skin layer. In this method, a water reactive binder is premixed with the filler. The skin layer has at least a porous part and an opening for supplying the filler to the inside of skin layer, and this skin layer is set in a padding and molding container. This padding and molding container has a cavity and a slide block that can move between an opening position and a closing position. When the slide block is moved into the closing position, the cavity is formed in a predetermined shape. The padding and molding container also has a supply port through which the filler is supplied to the inside of the skin layer and a suction port connected to a pumping source. When the slide block is moved into the opening position, the suction port connects between the cavity and the pumping source. The supply port is provided in the molding container such that the opening of the skin layer set in the padding and molding container fits to the supply port, and thereby the skin layer is set in the padding and molding container such that the opening of the skin layer fits to the supply port of the padding and molding container. Then, the pumping source is driven when the slide block is at the opening position, so that airflow is produced from the supply port to the inside of the skin layer through the opening of the skin layer and from the inside of the skin layer to the suction port. Then, a predetermined amount of the filler is supplied to the inside of the

skin layer by use of this airflow to form a padded body. Then, the slide block is moved into the closing position, and then, steam is passed through the inside of the padding and molding container.

The other aspect of the present invention is a method for manufacturing a padded body composed of a skin layer formed in a bag shape and filler made of a granular or fragmental material padded into the skin layer wherein the filler adheres each other and adheres to an inner surface of the skin layer. In this method, a water reactive binder is premixed with the filler. The skin layer has at least a porous part and an opening for supplying the filler to the inside of the skin layer, and this skin layer is set in a pre-molding container provided in a padding container. The padding container has an inner space, a suction port connected between the inner space and a pumping source and a supply port connected to the outside of the padding container. The pre-molding container has a cavity, an entry through which the filler is supplied to the inside of the skin layer and at least one through hole connected between the cavity and the inner space of the padding container. The entry is provided in the pre-molding container such that the opening of the skin layer set in the pre-molding container fits to the entry, and thereby the skin layer is set in the pre-molding container such that the opening of the skin layer fits to the entry of the pre-molding container. Then, the pumping source is driven to produce airflow from the supply port to the inside of the skin layer through the entry fitted to the opening of the skin layer by use of means for connecting between the supply port and the entry and from the inside of the skin layer to the suction port of the padding container through the through hole of the pre-molding container. Then, a predetermined amount of the filler is supplied to the inside of the skin layer by use of this airflow to form a padded body. Then, the padded body is set in a molding container having a cavity having a predetermined shape, and then, steam is passed through the inside of the molding container. It is desirable to use a funnel as the means for connecting between the supply port and the entry of

the pre-molding container.

Brief Description of Drawings

Fig.1 shows that filler is supplied into the inside of a skin layer set in a padding container.

Fig.2 shows that a padded body formed in a manner shown in Fig.1 is set in a molding container.

Fig.3 shows that steam is passed through a padded body set in a molding container.

Fig.4 shows a headrest to be attached to a seat used for an automobile. Fig.4a is a plan view of a skin layer of the headrest, Fig.4b is a bottom view of the skin layer and Fig.4c is a partial sectional view of the skin layer.

Fig.5 shows that a skin layer is set in a padding container when its lid part is opened.

Fig.6 shows that a padding container is closed by a lid part and filler is supplied to the inside of a skin layer by pumping the padding container.

Fig.7 shows that a padded body is set in a molding container and steam is passed through the inside of the molding container.

Fig.8 shows that a slide block of a padding and molding container is moved into its opening position and a skin layer with a stay is set in the padding and molding container.

Fig.9 shows that a slide block of a padding and molding container is moved into its opening position and a skin layer with a stay is set in the padding and molding container and this slide block is then moved into its closing position.

Fig.10 shows that a slide block of a padding and molding container is at its opening position, and the padding and molding container is pumped and filler is supplied to the inside of a skin layer.

Fig.11 shows that after filler is supplied to the inside of a skin layer, a

slide block of a padding and molding container is moved into its closing position and steam is passed through the inside of the padding and molding container.

Fig.12 shows that filler is supplied to the inside of a skin layer using a padding container according to the present invention.

Best Mode for carrying out the Invention

As described in "Background of the art", there are several problems associated with inserting an inner body formed of filler in the inside of a skin layer formed in a bag shape. Also, it takes long time for inserting such an elastic inner body in the inside of the skin layer while compressing the inner body. In contrast, according to the present invention, such problems do not arise. We now describe a method according to the present invention for manufacturing a padded body formed of filler made of a granular or fragmental material, with referring to Fig.1.

Fig.1 shows one arrangement wherein filler T is supplied to the inside of a skin layer set in a padding container 1. The padding container 1 is constructed of two parts, one being a main part 2, and another being a lid part 3 that can seal air-tightly its inside. The main part 2 has a suction port 4 connected to a vacuum pump (not shown). Also, the padding container 1 has a supply port 5 for supplying the filler T. The supply port 5 is positioned in opposite to the position of the suction port 4 and is positioned at a connection between the main part 2 and the lid part 3.

A skin layer 10 formed in a bag shape has a porous part and an opening 11, and the filler T is padded into the skin layer 10 through the opening 11. The opening 11 has a size fitted to the supply port 5 of the padding container 1.

The skin layer 10 is positioned in the main part 2 such that the opening 11 of the skin layer 10 fits to the supply port 5 of the padding container 1, and the padding container 1 is then closed by the lid part 3. The inside of the padding container 1 is air-tightly sealed by the lid part 3. In order to easily supply the

filler T, a funnel 12 is positioned so as to pass through the supply port 5 and the opening 11.

In this arrangement, when the vacuum pump is driven, air inside the padding container 1 is evacuated and the inside of the padding container is decompressed, so that air is flown from the outside of the padding container 1 into the inside of the skin layer 10 through the funnel 12 connected between the supply port 5 and the opening 11. That is, airflow is produced from the supply port 5 to the suction port 4 through the inside of the skin layer 10.

Then, when the filler T is approached to the funnel 12, the filler T is transported by this airflow so that the filler T is supplied to the inside of the skin layer 10. After a predetermined amount of the filler T is supplied, the operation of the vacuum pump is stopped. Then, the lid part 3 is opened and a padded body 23 (Fig.2) (the filler T is padded into the skin layer 10) is removed from the padding container 1.

As the filler used herein, not only a granular or fragmental material such as foamed urethane chips and a piece of cloth can be used, but also, for example, a very light weight material difficult to pad into the skin layer, such as feather of a feather pillow or a feather mat, can be used. In addition, a powder is difficult to handle when supplying to the inside of a skin layer because a powder is flew up. However, according to the present invention, a powder can be used as the filler.

A whole or a part of the skin layer may be porous. That is, airflow that can transport the filler is produced through a whole or a part of the skin layer. If a part of the skin layer is porous, the remaining part thereof may be non-porous.

In order to form a padded body wherein the filler adheres each other and adheres to an inner surface of the skin layer, a water reactive binder is premixed with the filler, and a mixture of the filler and the binder is padded into the skin layer, as described above. Then, the opening of the skin layer is closed, and thereby such a padded body is formed.

Then, the padded body 23 is set in a molding container 20 (an upper

mold 21, a lower mold 22) as shown in Fig.2 and is clamped between the upper mold 21 and the lower mold 22. Then, steam is passed through the inside of the molding container 20 (Fig.3). The binder reacts to the steam so that the filler adheres each other and adheres to the inner surface of the skin layer, and thereby a padded body that has a predetermined shape and is molded in one with the skin layer is manufactured.

As described above, since the padded body has already become a finished product molded in one with the skin layer when the padded body is molded, the work for inserting an inner body formed of the filler in the skin layer is avoided. That is, in the art, as a problem, it takes long time for the work for inserting the inner body in association with the surface-smoothness of the inner body and the separation of a fraction thereof. However, according to the present invention, such a problem is avoided and the manufacturing cost is considerably reduced. Moreover, in the art, when the inner body is covered with the skin layer, the skin layer is shifted relative to the inner body so that a wrinkle is produced on the skin layer and a seam of the skin layer is undesirably curved, and thus, as another problem, this makes its quality worse. However, according to the present invention, such a problem is not occurred.

In addition, in a padded body according to the present invention, since the filler adheres to an inner surface of the skin layer, the skin layer is not separated from the filler padded into the skin layer and is not shifted when practically using the padded body, and thus, the outline of the padded body can be stably maintained.

Example 1

Figs.4-7 show a method according to the present invention for manufacturing a headrest attached to a seat equipped in an automobile.

Fig.4a is a front view of a skin layer of the headrest and Fig.4b is its bottom view. The skin layer 40 of the headrest H used herein is porous and is

made of a fiber material, and a soft slab formed urethane 41 is attached on its back surface. On the bottom of the skin layer 40, holes 42, 42 are provided for inserting a stay 44 therein. Also, a slit 43 as an opening for supplying filler therein is provided on the bottom of the skin layer 40. This slit 43 is usually closed as shown in Fig.4c.

The stay 44 is inserted in the skin layer 40, and the skin layer 40 is then set in the main part 2 of the padding container 1 such that the slit 43 fits to the supply port 5, as shown in Fig.5. Then, the main part 2 is closed by the lid part 3, and the funnel 14 is positioned so as to pass through between the slit 43 and the supply port 5 (Fig.6).

The filler T used herein is waste produced in productive steps for manufacturing a seat equipped in an automobile. The waste is made of a soft foamed urethane material and a skin layer material of the seat. The waste is shattered to pieces and is then passed through 5mm screen mesh. The filler T is a mixture of those fragmental materials. The mixture contains 50wt% of soft foamed urethane and 50wt% of the skin layer material. 20wt% of urethane binder made of isocyanate pre-polymer (NCO: 15%) is sprayed to the filler, and then the mixture of the filler and the binder is stirred.

This urethane binder reacts to water so that its adhesive strength appears.

Then, the vacuum pump connected to the suction port 4 is driven, and thereby airflow is produced to the inside of the skin layer 40 through the funnel 14 positioned between the supply port 5 and the slit 43 and is produced to the suction port 4 through the skin layer 40. A predetermined amount (240g for a typical headrest) of the filler T described above is supplied to the inside of the skin layer 40 by use of this airflow to form a padded body 46. In general, even though the skin layer 40 is formed in a predetermined shape, the padded body 46 expands over its predetermined shape when the filler is supplied.

This padded body 46 is set in a molding container 70 (an upper mold 71,

a lower mold 72) having a predetermined cavity, as shown in Fig.7. This molding container 70 has air holes 73 for supplying steam to the cavity (in this figure, the air holes are provided in the lower mold 70).

The padded body 46 is set in the molding container 70 and is then shaped in a predetermined shape. Then, steam (for example, 5kg/cm², 1 minutes) is supplied to the inside of the molding container 70. Thereby, the binder reacts to the steam so that the filler adheres each other and adheres to an inner surface of the skin layer, and thus, the padded body is completely molded in the molding container.

Finally, the padded body completely molded is removed from the molding container.

Prior to supplying the filler to the inside of the skin layer, a water reactive binder is pre-supplied on a contact surface between the filler and the inner surface of the skin layer or an inserted member (in this example, a stay 44). This is because the adhesive strength and the adhesive reliability between the filler and the inner surface of the skin layer and between the filler and the insert member can be improved.

Example 2

In Example 1 described above, two separated devices such as the suction container and the molding container are used to mold the padded body. In Example 2, such a padded body is manufactured by use of only one device. Example 2 is now described with referring to Figs. 8-11.

With referring to Fig.8, a padding and molding container 80 has an upper mold 81 and a lower mold 82. The upper mold 81 is pivotally connected to the lower mold 82, and a cavity can be formed in the padding and molding container 80. The upper mold 81 has a slide block 81a and a suction port 84 connected to a vacuum pump. A supply port 85 is provided in the padding and molding container 80. The supply port 85 is provided at a position where the upper mold

81 meets the lower mold 82 such that the opening 43 of the skin layer 40 can fit to the supply port 85. (Also, holes or channels (not shown) may be provided for positioning a stay.)

While the padding and molding container 80 is closed by pivotally moving the upper mold 81, the slide block 81a can be air-tightly moved between an opening position and a closing position. When the slide block 81a is at the opening position, the cavity is connected to the vacuum pump through the suction port 84. When the slide block 81a is at the closing position, a predetermined shape of the cavity is formed inside the padding and molding container 80.

As shown in Fig.8, the skin layer 40 with a stay is set in the padding and molding container 80 such that the slit 43 fits to the supply port 85. Then, as shown in Fig.9, the upper mold 81 is pivotally moved and the padding and molding container 80 is then closed. When this, the slide block 81a is at its opening position, and the suction port 84 is connected to the cavity of the padding and molding container 80.

Then, as shown in Fig.10, the funnel 86 is positioned so as to pass through the supply port 85 and the slit 43, and the vacuum pump is then driven. Thereby, airflow is produced to the inside of the skin layer 40 through the funnel 86 connected between the supply port 85 and the slit 43 and from the inside of the skin layer 40 to the suction port 84 through the cavity. By use of this airflow, the filler T mixed with the binder as provided in Example 1 is supplied to the inside of the skin layer 40. When a predetermined amount of the filler T is supplied to the inside of the skin layer 40, the operation of the vacuum pump is stopped, and thereby a padded body is formed.

Then, as shown in Fig.11, the slide block 81a is moved into its closing position, and thereby the padded body is formed in a predetermined shape. Then, steam is supplied in the padding and molding container 80, and as a result, the padded body is molded in the predetermined shape, as described above in

connection to Example 1.

Example 3

Fig.12 shows a method according to the present invention for forming a padded body using a padding container 120 comprising a suction container 121 and a pre-molding container 122 provided therein. The pre-molding container 122 has an upper part 122a and a lower part 122b. The pre-molding container 122 has a cavity slightly larger than a finished product. The lower part 122b is fixed in the suction container 121. The suction container 121 has a suction port 121a connected to a vacuum pump (not shown) and a supply port 121b.

The pre-molding container 122 has an entry 123 to be fitted to the slit 43 of the skin layer 40 and through holes 124, 124 connected between the inside of the pre-molding container and the inner space of the suction container 121. While the suction container 121 is evacuated, the cavity of the pre-molding container 122 is also evacuated through the through holes 124, 124. Thus, since those through holes 124, 124 determine a flow direction inside the cavity, filler can be evenly padded into the skin layer by appropriately determining a position of each through hole 124.

In order to form a padded body, firstly, the skin layer 40 with a stay is set in the pre-molding container 122, and the pre-molding container 122 is then closed by the upper part 122a. Then, a funnel 126 is inserted to the entry 123 fitted to the slit 43 through the supply port 121b of the suction container 121.

Then, the suction container is sealed air-tightly, and the vacuum pump is then driven. Thereby, air is evacuated through the suction port 121a and air inside the cavity of the pre-molding container 122 is also evacuated through the through holes 124. That is, airflow is produced to the inside of the skin layer 40 through the funnel 123 connected between the supply port 121b and the entry 123 fitted to slit 43 of the skin layer 40. By this airflow, filler T prepared in a predetermined manner is supplied to the inside of the skin layer 40.

Thereby, the filler T is padded into the inside of the skin layer 40, and thus, a padded body is formed. Then, this padded body is set in the molding container shown in Fig.7, and thereby a padded body as a finished product is molded, as described in connection to Example 1.

According to the present invention, a padded body can be easily manufactured, without producing an undesirably curved seam and a wrinkle on the padded body, by padding filler into the skin layer and its quality is stably maintained even though any filler having any hardness is used.

Also, in a padded body manufactured according to the present invention, a skin layer of the padded body can be adhered to filler padded into it so as not to separate the skin layer from an inner body formed of the filler padded into it even though the padded body has a depression part.

In addition, according to the present invention, a padded body can be manufactured by use of filler made of a granular or fragmental material such as powder, feather, foamed urethane chips and a piece of the skin layer are produced in productive steps of a seat and accessories equipped in an automobile. In particular, according to the present invention, a padded body can be manufactured by use of a recycled material, as the filler, made of waste such as foamed urethane chips and a piece of the skin layer produced in productive steps of a seat and accessories equipped in an automobile.

CLAIMS

1. (Cancelled)
2. (Cancelled)
3. A method for manufacturing a padded body comprising the steps of:
preparing a skin layer formed in a bag shape, said skin layer having at least a porous part and an opening for supplying a granular or fragmental filler therein;
setting said skin layer in a padding container, said padding container having an inner space, a suction port connected between the inner space and a pumping source and a supply port for supplying said filler, said skin layer being set in said padding container such that said opening fits to said supply port;
driving said pumping source to produce airflow from said supply port to the inside of said skin layer through said opening and from the inside of said skin layer to said suction port; and
supplying a predetermined amount of said filler to the inside of said skin layer by use of said airflow to form the padded body.
4. The method of claim 3, further including the steps of:
premixing said filler and a water reactive binder;
setting the padded body in a molding container having a predetermined cavity; and
passing steam through the inside of said molding container,
wherein said binder reacts to said steam, and thereby the filler adheres each other and adheres to an inner surface of said skin layer.
5. A method for manufacturing a padded body comprising the steps of:

premixing filler made of a granular or fragmental material and a water reactive binder;

preparing a skin layer formed in a bag shape, said skin layer having at least a porous part and an opening for supplying said filler;

setting said skin layer in a padding and molding container, said padding and molding container having a slide block movable between a closing position and an opening position, a cavity formed in a predetermined shape when said slide block is moved into said closing position, a supply port for supplying said filler and a suction port connected between said cavity and a pumping source when said slide block is moved into said opening position, wherein said skin layer is set in said padding and molding container such that said opening fits to said supply port;

positioning said slide block at said opening position, and driving said pumping source to produce airflow from said supply port to the inside of said skin layer through said opening and from the inside of said skin layer to said suction port;

supplying a predetermined amount of said filler to the inside of said skin layer by use of said airflow to form a padded body;

moving said slide block into said closing position; and

passing steam through the inside of said padding and molding container, thereby said binder reacts to said steam so that said filler adheres each other and adheres to an inner surface of said skin layer.

6. A method for manufacturing a padded body comprising the steps of:

premixing filler made of a granular or fragmental material and a water reactive binder;

preparing a skin layer formed in a bag shape, said skin layer having at least a porous part and an opening for supplying said filler therein;

setting said skin layer in a pre-molding container provided inside a

suction container, said suction container having an inner space, an output port connected between the inner space and a pumping source and an input port connected to the outside thereof, said pre-molding container having a cavity, a suction port connected between said cavity and said inner space and a supply port disposed so as to fit to said opening, wherein said skin layer is set in said pre-molding container such that said opening fits to said suction port;

driving said pumping source to produce airflow from said input port to the inside of said skin layer through said opening fitted to said supply port by use of means for connecting between said input port and said supply port and from the inside of said skin layer to said output port through said suction port;

supplying a predetermined amount of said filler to the inside of said skin layer by use of said airflow to form a padded body;

setting the padded body in a molding container having a cavity having a predetermined shape; and

passing steam through the inside of said molding container;

thereby said binder reacts to said steam, and said filler adheres each other and adheres to an inner surface of said skin layer.

7. The method of claim 6, wherein a funnel is used as said means for connecting between said input port and said supply port.

8. (Amended) The method of any one of claims 3, 5 or 6, wherein said filler is made of foamed urethane, cloth or plastics, and said binder is a urethane binder.

9. (Cancelled)

10. (Cancelled)

11. A padding and molding container having a cavity therein comprising:
a slide block movable between a closing position and an opening position.

a supply port for supplying filler made of a granular or fragmental material to the inside of a skin layer having at least a porous part and an opening for supplying said filler therein, said opening fitting to said supply port; and

a suction port connected between said cavity and a pumping source when said slide block is at said opening position, said cavity having a predetermined shape when said slide block is at said closing position.

12. The padding and molding container of claim 11, wherein when said slide block is at said opening position and said pumping source is driven, airflow is produced from said supply port to the inside of the skin layer through said opening and from the inside of said skin layer to said suction port, and said filler is supplied to the inside of said skin layer by use of said airflow, and

wherein when said slide block is at said closing position, a padded body in which a predetermined amount of said filler is padded is set in said molding container and is formed in a shape corresponding to said predetermined shape of said cavity.

13. The padding and molding container of claim 12 further including at least one air hole for passing steam through said air hole, when a water reactive binder is mixed with said filler to be supplied.

14. A padding container for forming a padded body comprising of:
an inner space;
a suction port connected between said inner space and a pumping source;

a supply port connected to the outside of the padding container; and

a pre-molding container provided in said inner space,

said pre-molding container comprising of:

a cavity formed therein;

an entry for supplying filler made of a granular or fragmental material to the inside of a skin layer having at least a porous part and an opening, said filler being supplied to the inside of said skin layer through said opening; and

at least one through hole connected between said cavity and said inner space,

wherein said skin layer is set in said pre-molding container such that said opening fits to said entry.

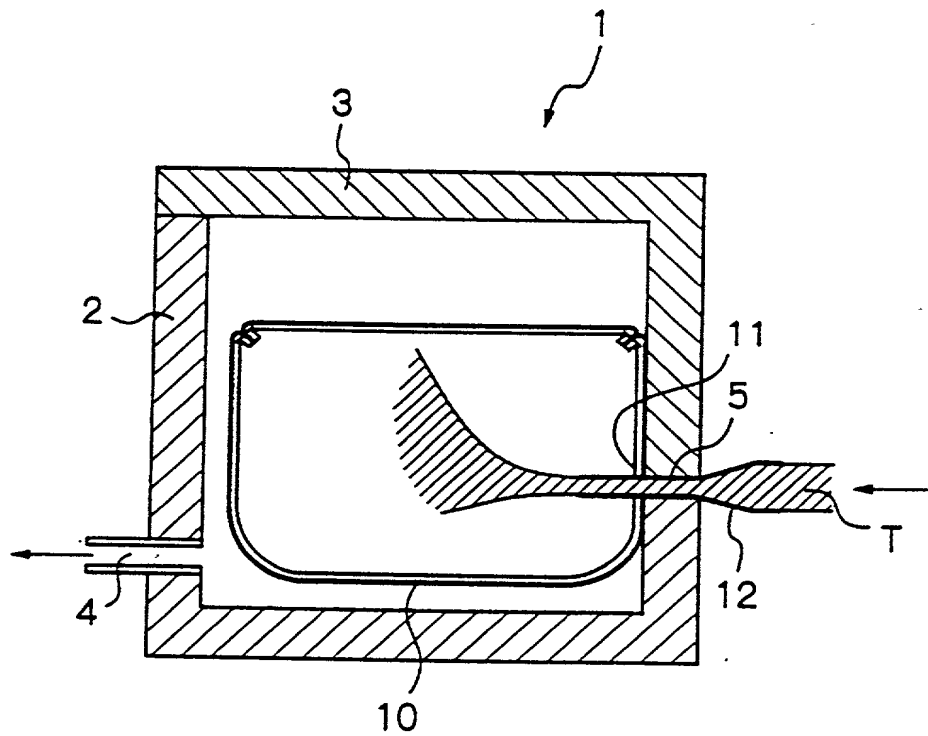
15. The padding container of claim 14, wherein said supply port is connected to said opening by use of a funnel.

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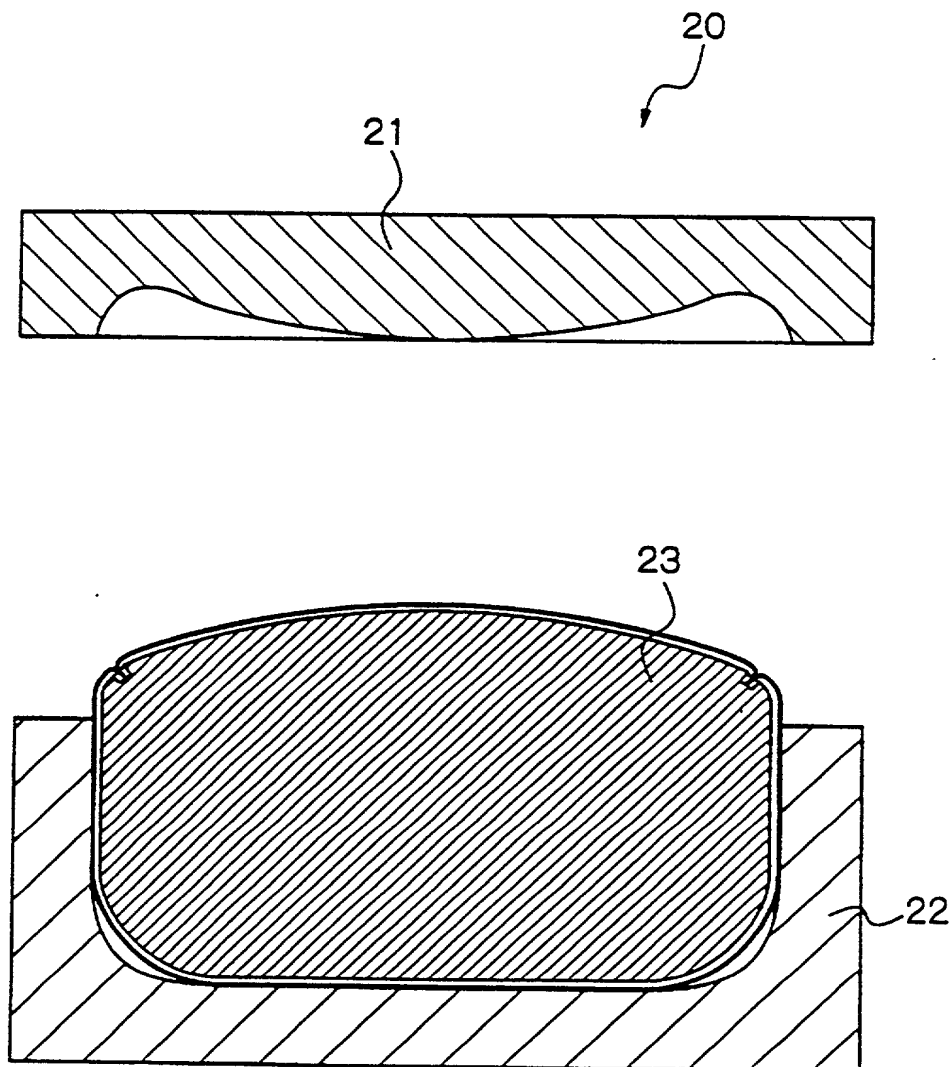
1/11

Fig. 1



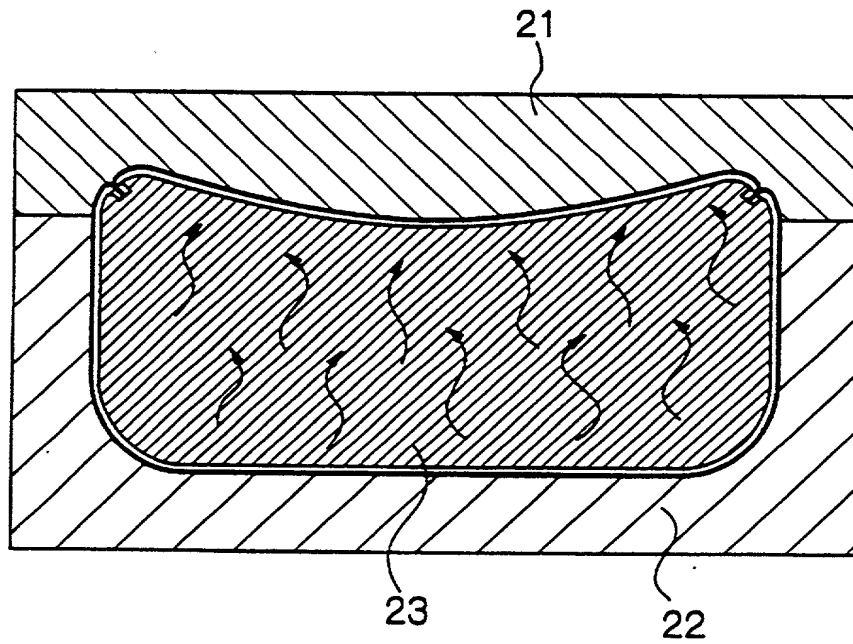
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Fig. 2



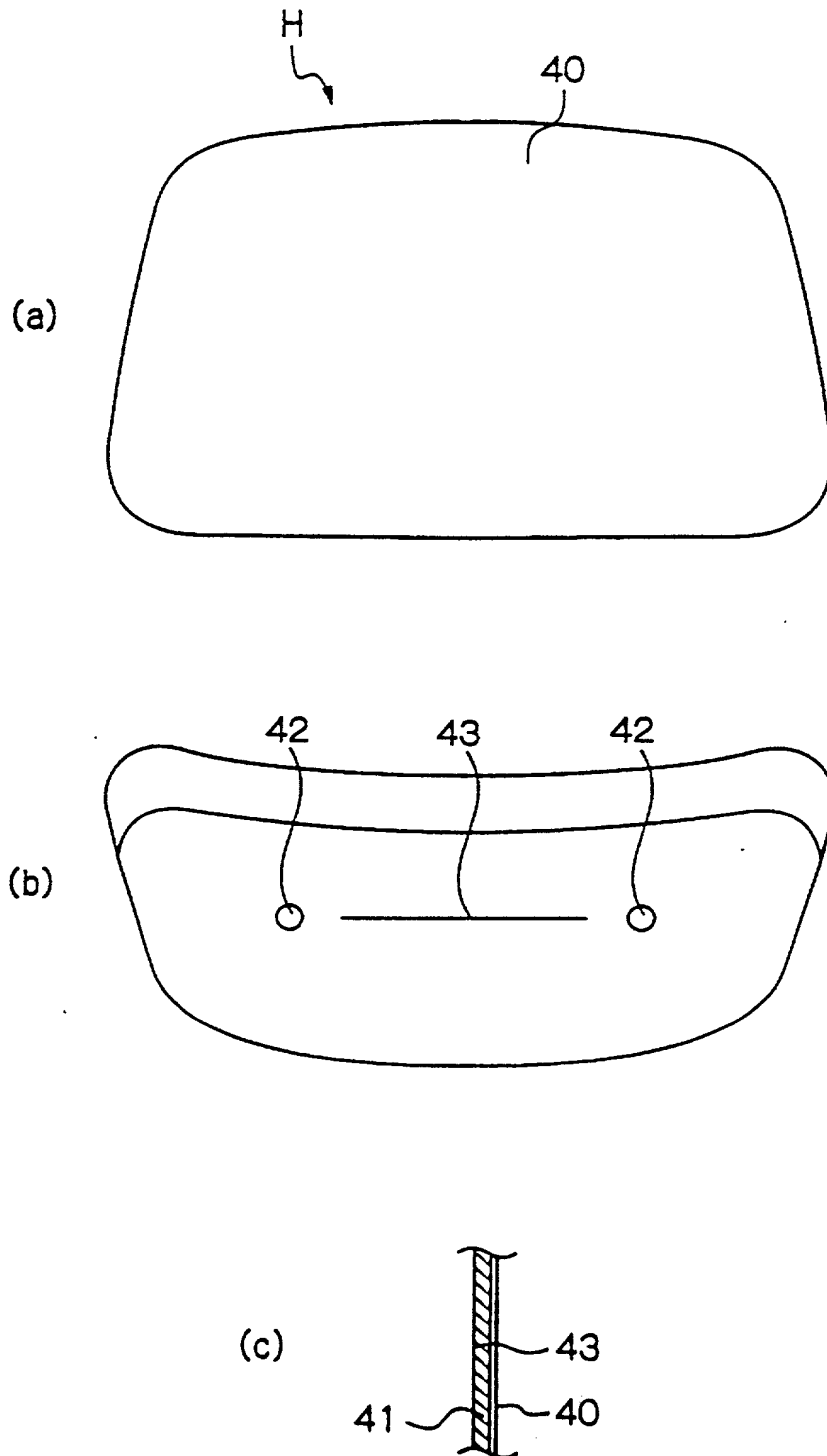
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Fig. 3



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Fig. 4



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Fig. 5

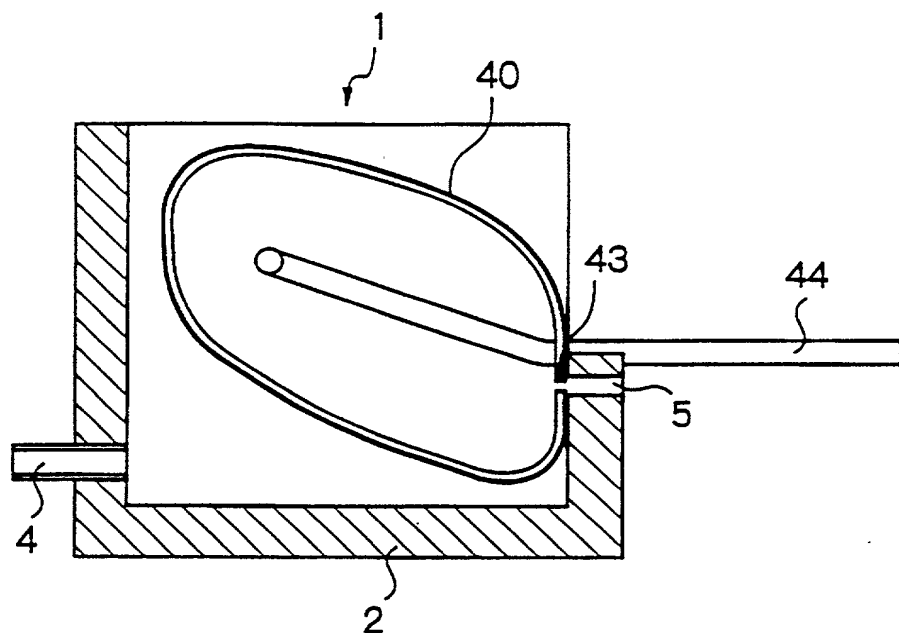
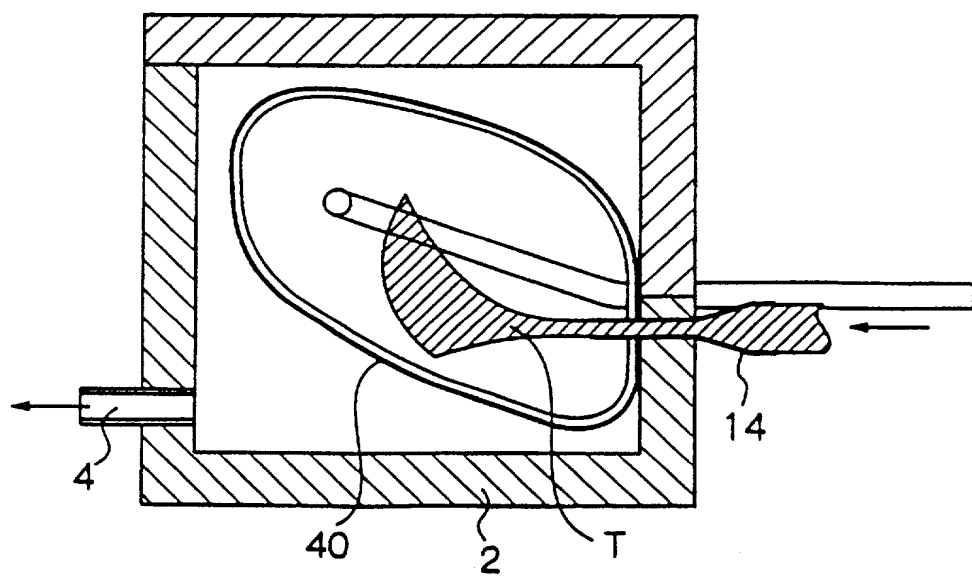
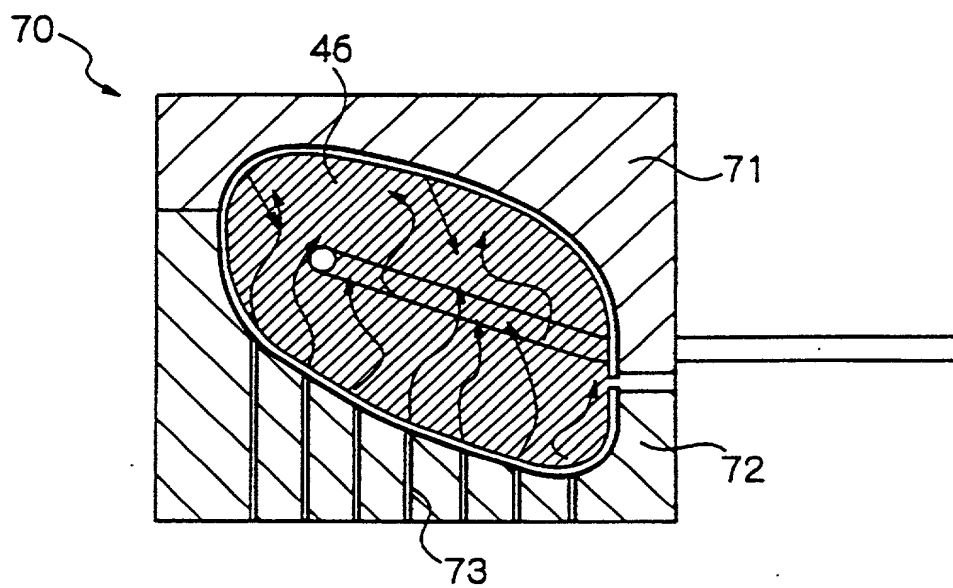


Fig. 6



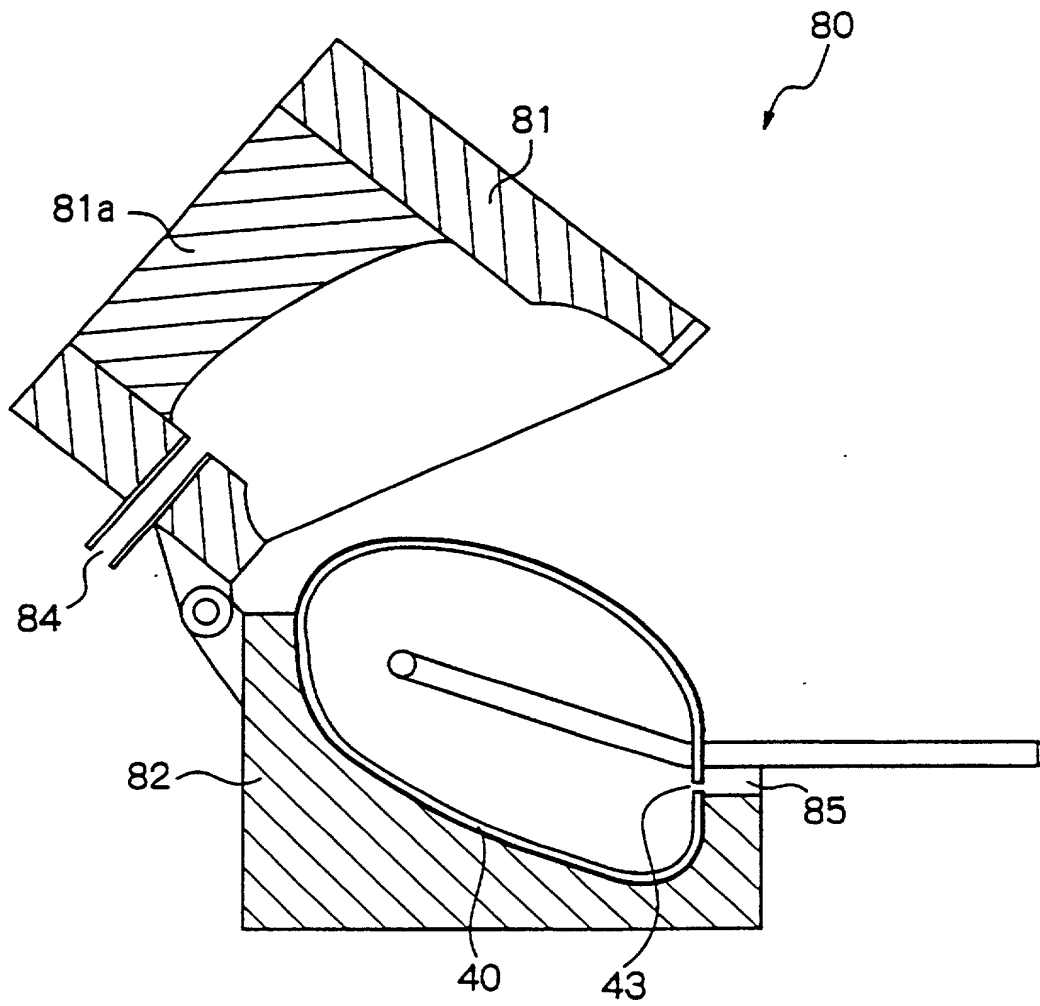
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Fig. 7



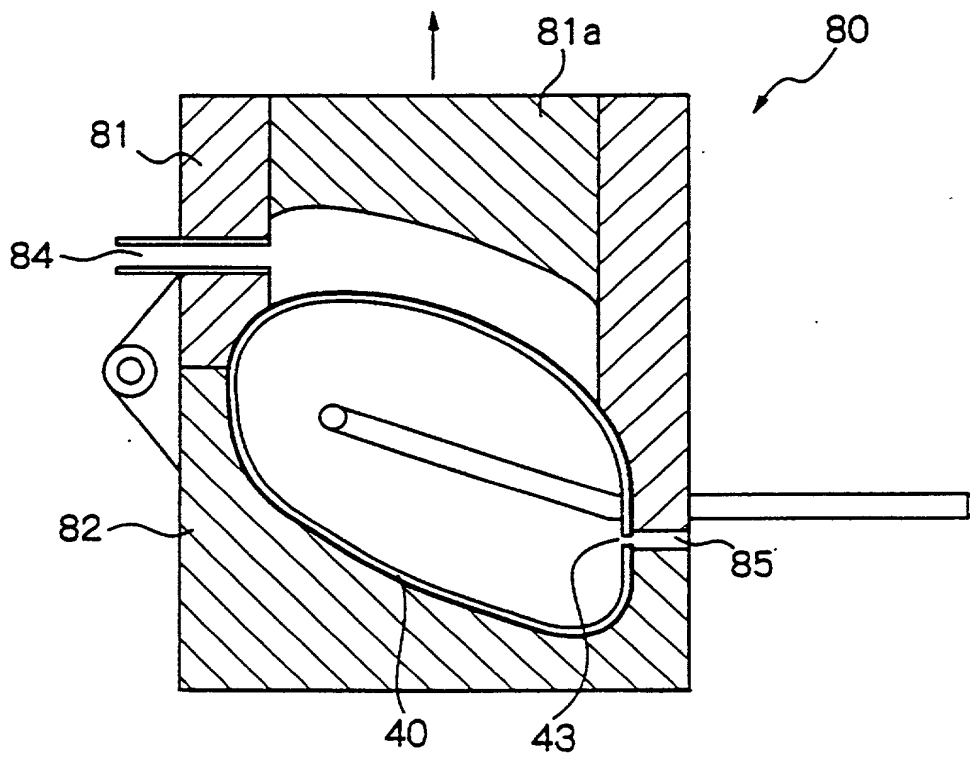
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Fig. 8



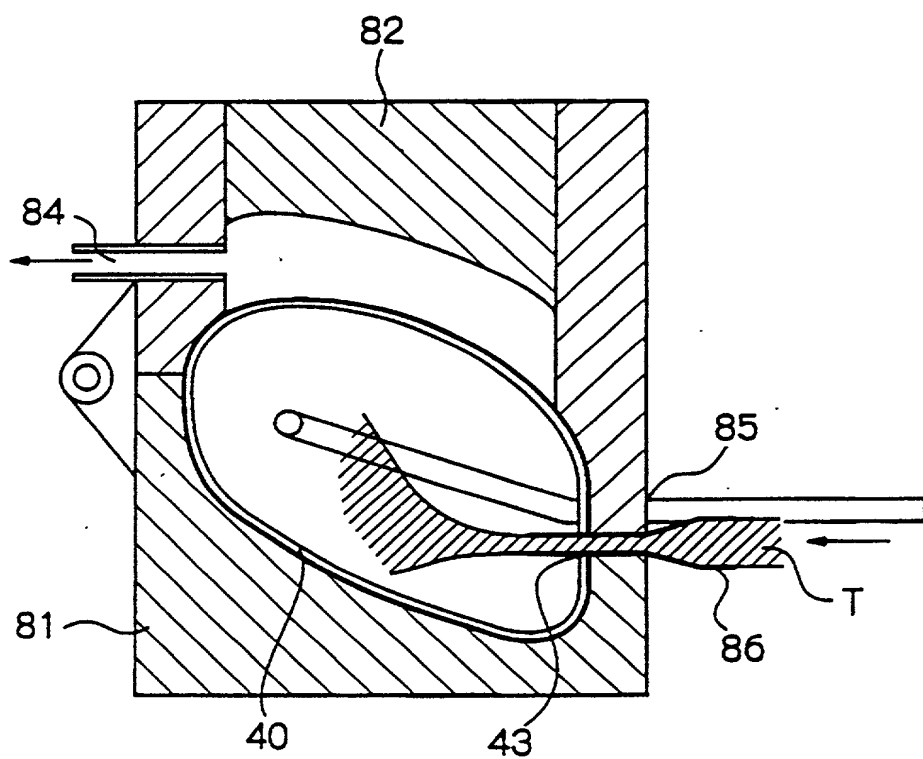
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Fig. 9



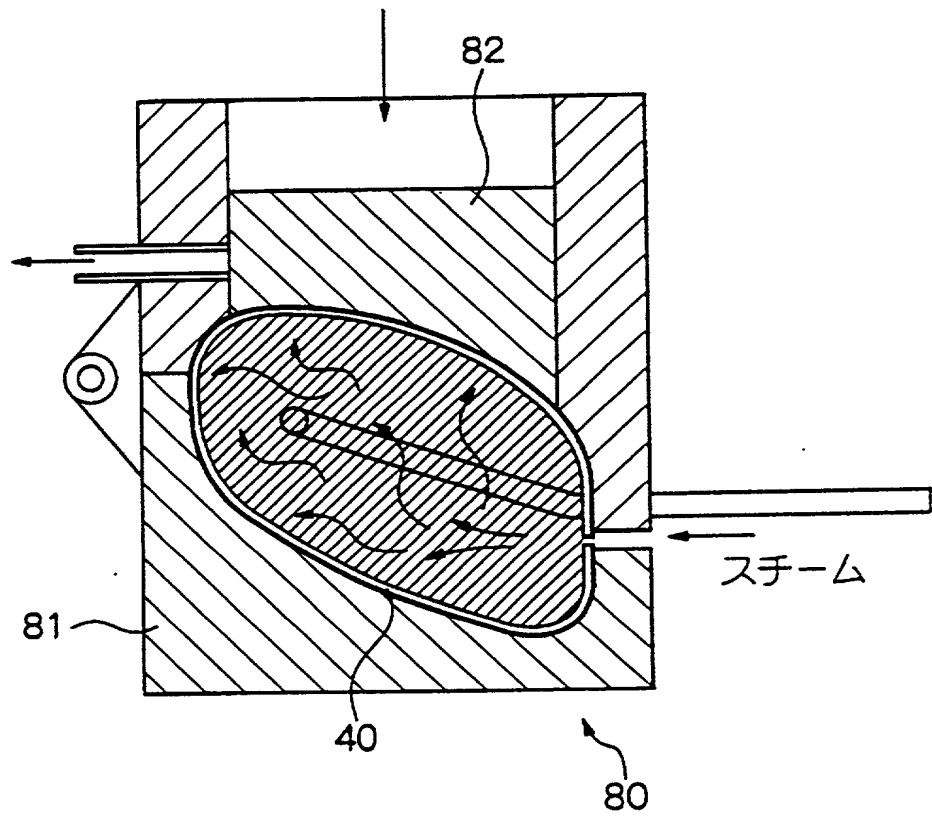
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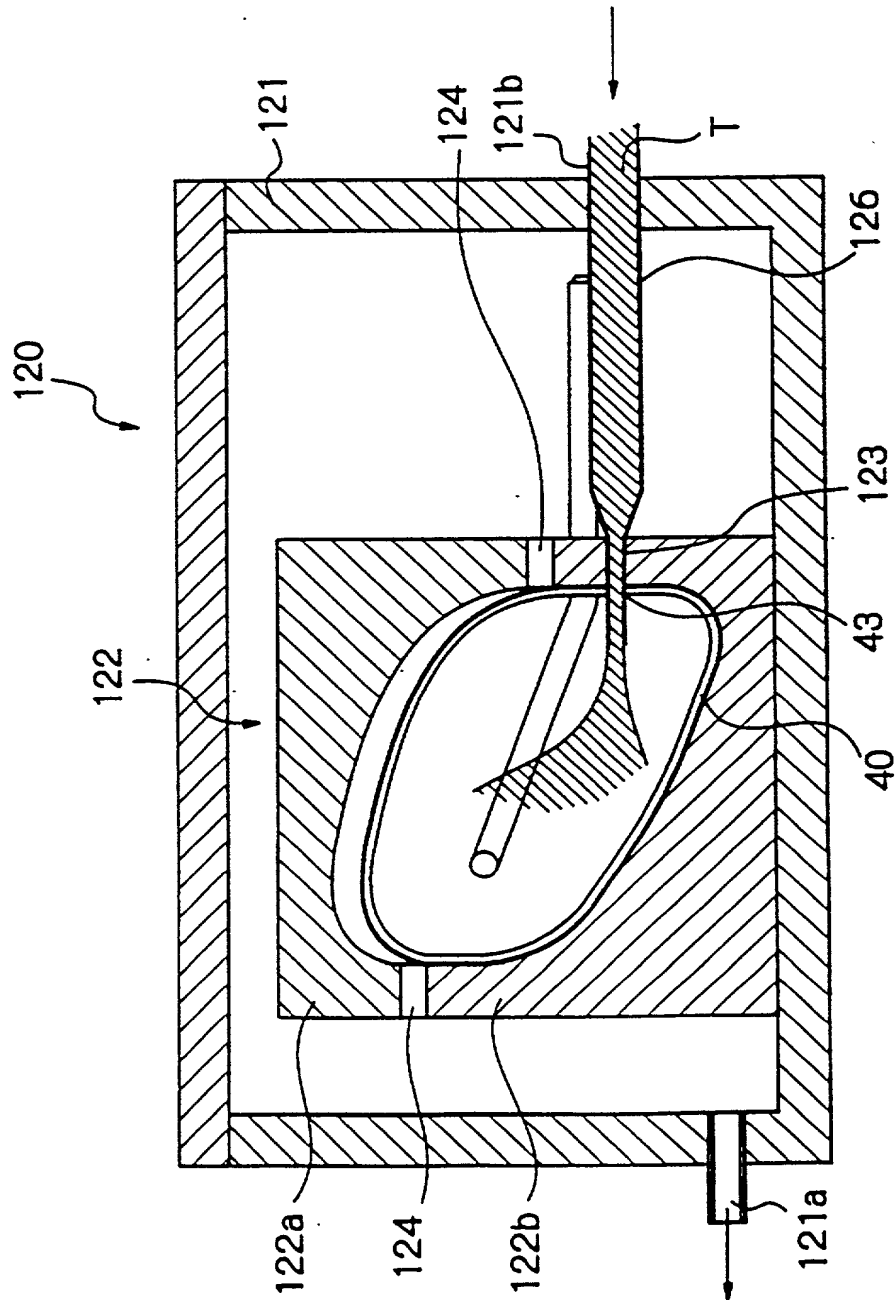
Fig. 10



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Fig. 11





Declaration and Power of Attorney For Patent Application

特許出願宣言書 Japanese Language Declaration

私は、下欄に氏名を記載した発明者として、以下のとおり宣言する：

私の住所、郵便の宛先および国籍は、下欄に氏名に続いて記載したとおりであり、

名称の発明に関し、請求の範囲に記載した特許を求める主題の本来の、最初にして唯一の発明者である（一人の氏名のみが下欄に記載されている場合）か、もしくは本来の、最初にして共同の発明者である（複数の氏名が下欄に記載されている場合）と信じ、

その明細書を
(該当する方に印を付す)

☐ ここに添付する。

☐ _____ 日に出席番号

第 _____ 号として提出し、

_____ 日に補正した。
(該当する場合)

私は、前記のとおり補正した請求の範囲を含む前記明細書の内容を検討し、理解したことを陳述する。

私は、連邦規則法典第37部第1章第56条(a)項に従い、本願の審査に所要の情報を開示すべき義務を有することを認める。

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

PADDED BODY

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on February 17, 2000 as

Application Serial No. PCT/JP00/00908

and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

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私は、合衆国法典第35部第119条にもとづく下記の外国特許出願または発明者証出願の外国優先権利益を主張し、さらに優先権の主張に係わる基礎出願の出願日前の出願日を有する外国特許出願または発明者証出願を以下に明記する：

Prior foreign applications
先の外国出願

Heisei 11 (1999)-
289480

Japan

12 October 1999 (12. 10. 1999)

(Number)
(番号)

(Country)
(国名)

(Day/Month/Year Filed)
(出願の年月日)

PCT/JP00/00908

PCT

17 February 2000 (17. 02. 2000)

(Number)
(番号)

(Country)
(国名)

(Day/Month/Year Filed)
(出願の年月日)

(Number)
(番号)

(Country)
(国名)

(Day/Month/Year Filed)
(出願の年月日)

Priority claimed
優先権の主張

☒ Yes
あり

☐ No
なし

☒ Yes
あり

☐ No
なし

☐ Yes
あり

☐ No
なし

私は、合衆国法典第35部第120条にもとづく下記の合衆国特許出願の利益を主張し、本願の請求の範囲各項に記載の主題が合衆国法典第35部第112条第1項に規定の態様で先の合衆国出願に開示されていない限度において、先の出願の出願日と本願の国内出願日またはPCT国際出願日の間に公表された連邦規則法典第37部第1章第56条(a)項に記載の所要の情報を開示すべき義務を有することを認める：

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)
(出願番号)

(Filing Date)
(出願日)

(現況)
(特許済み、係属中、放棄済み)

(Status)
(patented, pending, abandoned)

(Application Serial No.)
(出願番号)

(Filing Date)
(出願日)

(現況)
(特許済み、係属中、放棄済み)

(Status)
(patented, pending, abandoned)

私は、ここに自己の知識にもとづいて行った陳述がすべて真実であり、自己の有する情報および信ずるところに従って行った陳述が真実であると信じ、さらに故意に虚偽の陳述等を行った場合、合衆国法典第18部第1001条により、罰金もしくは禁錮に処せられるか、またはこれらの刑が併科され、またかかる故意による虚偽の陳述が本願ないし本願に対して付与される特許の有効性を損うことがあることを認識して、以上の陳述を行ったことを宣言する。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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委任状：私は、下記発明者として、以下の代理人をここに選任し、本願の手続を遂行すること並びにこれに関する一切の行為を特許商標庁に対して行うことを委任する。
(代理人氏名および登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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| 同発明者の署名 | Inventor's signature | <u>Taro Ogawa</u> |
| 日付 | Date | <u>May 28, 2001</u> |
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| 同第2発明者の署名 | 2nd Inventor's signature | <u>Yasumasa Senoo</u> |
| 日付 | Date | <u>May 28, 2001</u> |
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| 同発明者の署名 日付 | Inventor's signature <u>Yasuyuki Toda</u> Date <u>May, 28, 2001</u> |
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| 国籍 | Citizenship <u>JAPAN</u> |
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| 同第4発明者の署名 日付 | 4th Inventor's signature <u>Mitsuo Katayama</u> Date <u>May, 28, 2001</u> |
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| 第5の共同発明者の氏名 (該当する場合) | | Full name of 5th joint inventor, if any <u>5-00</u> <u>TAKAHIRO HARA</u> | |
| 同発明者の署名 | 日付 | Inventor's signature <u>Takahiro Hara</u> | Date <u>May 20, 2001</u> |
| 住所 | | Residence 4-84 Idacho Owariasahi-city, Aichi 488-0024 JAPAN | <u>JPA</u> |
| 国籍 | | Citizenship JAPAN | |
| 郵便の宛先 | | Post Office Address 4-84 Idacho Owariasahi-city, Aichi 488-0024 JAPAN | |
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| 同第6発明者の署名 | 日付 | 6th Inventor's signature | Date |
| 住所 | | Residence | |
| 国籍 | | Citizenship JAPAN | |
| 郵便の宛先 | | Post Office Address | |

(第六またはそれ以降の共同発明者に対しても同様な情報および署名を提供すること。)

(Supply similar information and signature for third and subsequent joint inventors.)